



Attention Middle/High School Teachers:

Your local region of American Water Works Association, Region IV, is proud to announce the third Annual Model Water Tower Competition. This competition provides students with a fun-filled, science oriented competition aimed at introducing middle and high school students to engineering and the water profession. We are pleased to invite **3 student teams per school** to participate with other Region IV middle/high school students in this unique competition. **Each middle school and high school will be allowed to enter 3 of their top student teams to compete for bragging rights for the best Model Water Tower in Region IV!**

This competition requires students to design and build a water tower with specific size and height requirements. The models are judged based on 4 categories including: cost efficiency, hydraulic efficiency, structural efficiency, and design ingenuity. All of the specific requirements for the water tower model judging are defined in the Judging Handout, and their associated scoring factors are listed within this packet.

Every Contestant will receive a Certificate of Participation from AWWA. Grand Prizes will be awarded to the 3 Top Overall Models (based on the lowest accumulated score). **Grand prizes include \$300, \$200, and \$100 award for 1st, 2nd, and 3rd place, respectively.**

This competition requires very little of the classroom teacher's time, but success of the student is directly dependant on the student having the opportunity and encouragement to enter. We are asking Region IV Math, Science, and Technology middle and high school teachers to present the Model Water Tower Competition to their classroom, hand out the Model Water Tower Competition Student Packets to the students, and collect and return the student registration forms to the AWWA Region IV -Youth Education Committee Chair (see below). Enclosed you will find a sample student packet with more detailed information regarding model building and the competition guidelines.

Please notify Emilie Moore at 813-282-7890 ext:1005 (emilie.moore@tetrattech.com) if you are interested in promoting the Model Water Tower Competition to your middle school or high school students. We will be happy to provide support within your classroom if needed. We look forward to working with you and your students.

Thank you for your positive consideration for the Model Water Tower Competition in your classroom.

A handwritten signature in black ink, appearing to read "Emilie Moore".

Emilie A. Moore
Tetra Tech
FSAWWA Region IV Youth Education Chair

A handwritten signature in black ink, appearing to read "Christina L. Pellegatti".

Christina L. Pellegatti
Pasco County Utilities
FSAWWA Region IV Youth Education Vice Chair

“From Today’s Youth Come Tomorrow’s Leaders-Let’s Lead Some to the Water Profession”

American Water Works Association
AWWA  FLORIDA
Region IV

Dear Middle/High School Parent:

Your local region of American Water Works Association, Region IV, is proud to announce the third Annual Model Water Tower Competition. This competition provides students with a fun-filled, science oriented contest aimed at introducing middle and high school students to engineering and the water profession. We are pleased to invite your child to participate with other Region IV middle/high school students in this unique competition.

This competition requires students to design and build a water tower with specific size and height requirements. The judging takes place on **November, 13, 2010**, at the **USF Fish Bowl Room**, starting at **9:00 am**. The models are judged based on 4 categories including: cost efficiency, hydraulic efficiency, structural efficiency, and design/materials ingenuity. Cash prizes will be awarded to the top three overall winners. All of the specific requirements for the water tower model judging are defined in the Judging Handout, and their associated scoring factors are listed within this packet.

Each student will receive a packet that includes all necessary information to successfully enter and build a water tower model. The Water Tower Model Competition Registration Forms must be completed, signed by the team advisor, and returned to the teacher or mailed to the MWTC Chairs below by **October 8, 2010**. While the individual or student team must build the models, parents are encouraged to coach and mentor their student throughout the design and build phase of their water tower model.

- **Classroom Registration** - Teachers have until the morning of **October 8, 2010** to return their student registration forms to the youth education chairs either by email or mail to one of the addresses below.
- **Model Building** - will occur by students in their spare time up until the Judging Day.
- **Judging Day – November 13, 2010** at the **USF Fish Bowl Room, Engineering Building II**.
Registration is held from **9:00-11:00 am**. Students arriving **after 12:00 pm will not be eligible to compete**. Judging and final awards will occur when all towers have been processed. Lunch will be provided for all who attend.

For additional information regarding the Model Water Tower Competition, please contact Emilie A. Moore at 813-282-7890 ext: 1005 (emilie.moore@tetrattech.com).

Sincerely,



Emilie A. Moore
FSAWWA – Youth Education Chair – Region IV
Tetra Tech - 5601 Mariner Street, Tampa, FL 33609
Phone: (813) 282-7890 ext:1005



Christina L. Pellegatti
FSAWWA – Youth Education Vice Chair – Region IV
Pasco County Utilities – Publics Works/Utilities Bldg. S-205
Phone: (727)-847-8145

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Instructions

General

- The 3rd Annual Model Water Tower Competition will be held as follows:
 - When: Saturday, **November 13, 2010**
 - Time: Check-in is between **9:00-11:00 am**
 - Where: **USF – Engineering Building II – Fish Bowl Room, USF Campus Tampa, FL**
- There is no cost to enter. To participate, arrive at the check-in with the following materials:
 - Bring your completed **model water tower**.
 - Bring your completed **Registration**, a blank form is attached.
 - Bring your completed **Participant Release**, a blank form is attached.
 - Bring your completed **Materials List**, a blank form is attached.
- Model water towers may be of any design and constructed from any materials. In fact, you will be awarded for using **creative designs** and **innovative materials**. A creative design is a water tower that will function even though it does not look like any other tower. Examples of innovative materials are an old broom stick from your garage as a support structure, a gas can as a tank, or any other atypical items that you might find laying around the house.

Objective

The objective of the competition is to make participants aware of the importance of **reliable drinking water** and the rewarding opportunities available in the **water profession**. The competition meets this objective by having students develop an idea into a functioning water tower, just like water professionals do in the real world.

Prizes will be awarded to the top three finishers in the middle school and high school categories. The lowest scores win. Judges decision is final and non refutable.

Judging will be based on **four criteria** – structural efficiency, hydraulic efficiency, cost efficiency, and design ingenuity. Understand and achieve these criteria to do well! They are explained below.

Structural Efficiency

Structural efficiency is calculated by **dividing** the weight of the model when it is empty by the average height of the tank **times** the amount of water it holds. The lower this number is the more structurally efficient is the tower's design. This is shown with the following formula:

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$$\text{Structural Efficiency} = \frac{\text{Weight of the tower when empty (pounds)}}{\text{Average tank height (ft)} \times \text{Amount of water the model holds (gal)}}$$

This criterion is similar to what engineer's use in the real world! Remember, the tank should be between 1.5 feet and 2.5 feet high (See Drawing Provided) and hold at least 1 gallon of water but no more than 2.5 gallons!

Hydraulic Efficiency

Hydraulic efficiency is the amount of **time it takes** the judges to fill the model with 1 gallon of water and drain it back out again. The judges will fill the tank through the 3/8 inch connector. The less time it takes to fill and drain the tank through the connector the better. **The tank must have a vent or a cover so the judge can see into the tower during filling. Coverless towers will not be considered vented.**

Cost Efficiency

Cost efficiency measures your ability to save money while building your model. **Bring receipts** for all items purchased for your model. Points will be assigned as follows (the lower the score the better):

\$ 0.00 - \$ 5.00	1 point
\$ 5.01 - \$ 10.00	2 point
\$ 10.01 - \$ 15.00	3 point
\$ 15.01 - \$ 20.00	4 point
More than \$ 20.00	5 point

List all items used in your model and their costs on the **Materials List Form**. This form is required on the day of the event. Where recycled items are used, put the letter "R" in the cost column. You may use as many recycled materials as you wish. A penalty of 1 point will be given for each missing receipt for items purchased new specifically for tower construction. A 3 point penalty will be added to the student's score if the Materials list form is missing. No receipt is necessary for recycled items; however, the items must be accounted for on the materials list form. The cost of glue, nails, screws, general adhesives, and items used to decorate the tower should not be counted towards the tower's total cost. The cost of the tower should **not** include tax.

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Design Ingenuity

Ingenuity (in·ge·nu·i·ty) is how much **imagination and skill** were used in your model. Water professionals must often use ingenuity; they use skill and imagination to solve difficult problems. The judges will look at several items:

- Craftsmanship (is the model sturdy, do the parts fit together nicely)?
- Imagination (are the design and materials unique)?
- Artistic merit (does the model have creative ideas, colors or themes)?

Required Design Standards and Penalties

Keep to the following standards when designing and constructing your model:

- The base of the model must fit in a square **1 foot on each side**.
- The tank must be **between 1.5 and 2.5 feet high (See Drawing)**.
- The tank must have a **vent or removable lid** so the judges can tell when it is full. Uncovered towers or non-vented towers will result in a penalty of 1 point.
- When full, the tank must **hold between 1 and 2.5 gallons** of water and it **should not leak**. Hint: test your model to make sure the tower can hold the weight of the water!
- The model must use the **3/8 inch connector** as supplied.
- **Bring receipts** for all materials purchased for your model. A one point penalty will be given for each item not having a receipt (Max of 3 points).
- **Bring materials list**. 3 points will be added to the score if a list is not provided.
- **Structural instability** (i.e., tower has to be supported by a person during filling or during any evaluation) – 2 point penalty will be added to the score.

Penalties will be assessed for not following the above standards. These standards are demonstrated in the diagram attached at the end of this hand-out.

Additional Information:

For more information please contact the event organizers as follows:

Emilie A. Moore

Youth Education Chair -FSAWWA Region IV

(813) 282-7890 ext: 1005

emilie.moore@tetrattech.com

Christina L. Pellegatti

Youth Education Vice Chair – FSAWWA Region IV

(727) 847-8145 ext: 8667

cpellegatti@pascocountyfl.net

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Registration

Team Name: _____

School/Grade: _____

Teacher or Advisor: _____

******Complete this form and return to your teacher. Teachers must return form to Event Coordinator before pre-registration date (October 8, 2010).**

List the name of your team members below. Teams may have from 1 to 4 members.

Name*	Grade	Telephone #
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____



Participant Release Form

INSTRUCTIONS: Complete this form with your parent or legal guardian's signature and return to your teacher. **Teachers must return the forms to the Event Coordinator before the pre-registration deadline (October 8, 2010).**

I AM THE PARENT/GUARDIAN OF _____

I HEREBY AUTHORIZE THE MEMBERS OF THE WATER TOWER COMPETITION COMMITTEE, A SPECIAL PROJECT OF THE AMERICAN WATERWORKS ASSOCIATION-YOUTH EDUCATION COMMITTEE TO:

1. PREPARE ANY PROMOTIONAL MATERIAL SUCH AS PRESENTATIONS, SLIDE SHOWS, VIDEO TAPES, PHOTOGRAPHS AND MOVIE FILMS IN WHICH MY CHILD WILL SPEAK AND/OR APPEAR.
2. USE, REUSE, PUBLISH AND REPUBLISH THE SAME IN THE WHOLE OR IN PART INDIVIDUALLY OR IN CONJUNCTION WITH OTHER PHOTOGRAPHS , VIDEO OR FILM IN ANY MEDIUM FOR ANY PURPOSES WHOSOEVER, INCLUDING (BUT NOT BY WAY OF LIMITATION) ILLUSTRATION, PROMOTION AND ADVERTISING BY THE COMMITTEE.

I HEREBY WAIVE ANY MONETARY RIGHTS OR OTHER RIGHTS THAT I MAY HAVE TO INSPECT AND/OR TO APPROVE THE FINISHED PRODUCT OR THE ADVERTISING COPY THAT MAY BE USED IN CONNECTION THEREWITH OR THE USE TO WHICH IT MAY BE APPLIED. I UNDERSTAND AND AGREE THAT ALL RIGHTS, ROYALTIES AND MATERIALS WILL BELONG TO THE COMMITTEE.

Parent/Guardian_(Print Full Name)_____

Parent/Guardian_(Signature)_____

Date_____ Phone #_____



Materials List Form

Team Name: _____

Participants: _____

Complete and bring this form and all receipts on the day of the contest. List the materials and costs used to construct your model water tower. Put an 'R' in the cost column where recycled materials are used.

MATERIAL	COST
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
	TOTAL _____

* Use additional sheets if necessary to list all materials. A penalty will be given for not bringing this form or receipts.

Model Water Tower Connector



The proper 3/8" diameter push-on connector will be provided to all registered contestants. You must use the connector given to you to avoid a penalty. Contact your teacher sponsor to receive the connector. If you do not have a teacher sponsor, contact the event organizer as follows to receive a connector:

Emilie A. Moore
FSAWWA Region IV Youth Education Chair
Tetra Tech, Inc.
5601 Mariner Street, Suite 490
Tampa, FL 33609
(813) 282-7890 ext: 1005



Directions to MWTC at USF

From the north:

Take I-275 south to the Fowler Avenue exit (#51) and head east or take I-75 south to the Fowler Avenue exit (#265) and head west. The main entrance to the university is at 4202 East Fowler Avenue. Turn into the main entrance (Leroy Collins Blvd). Turn Left onto USF Alumni Drive. The Engineering parking lot will be on your right. Engineering building II (ENB) is located between the Center for Urban Transportation Research (CUT) and Engineering Building III (ENC).

From the east:

Take I-4 to I-75 and head north. Exit at Fowler Avenue and head west to the university's main entrance. See directions above

From the south:

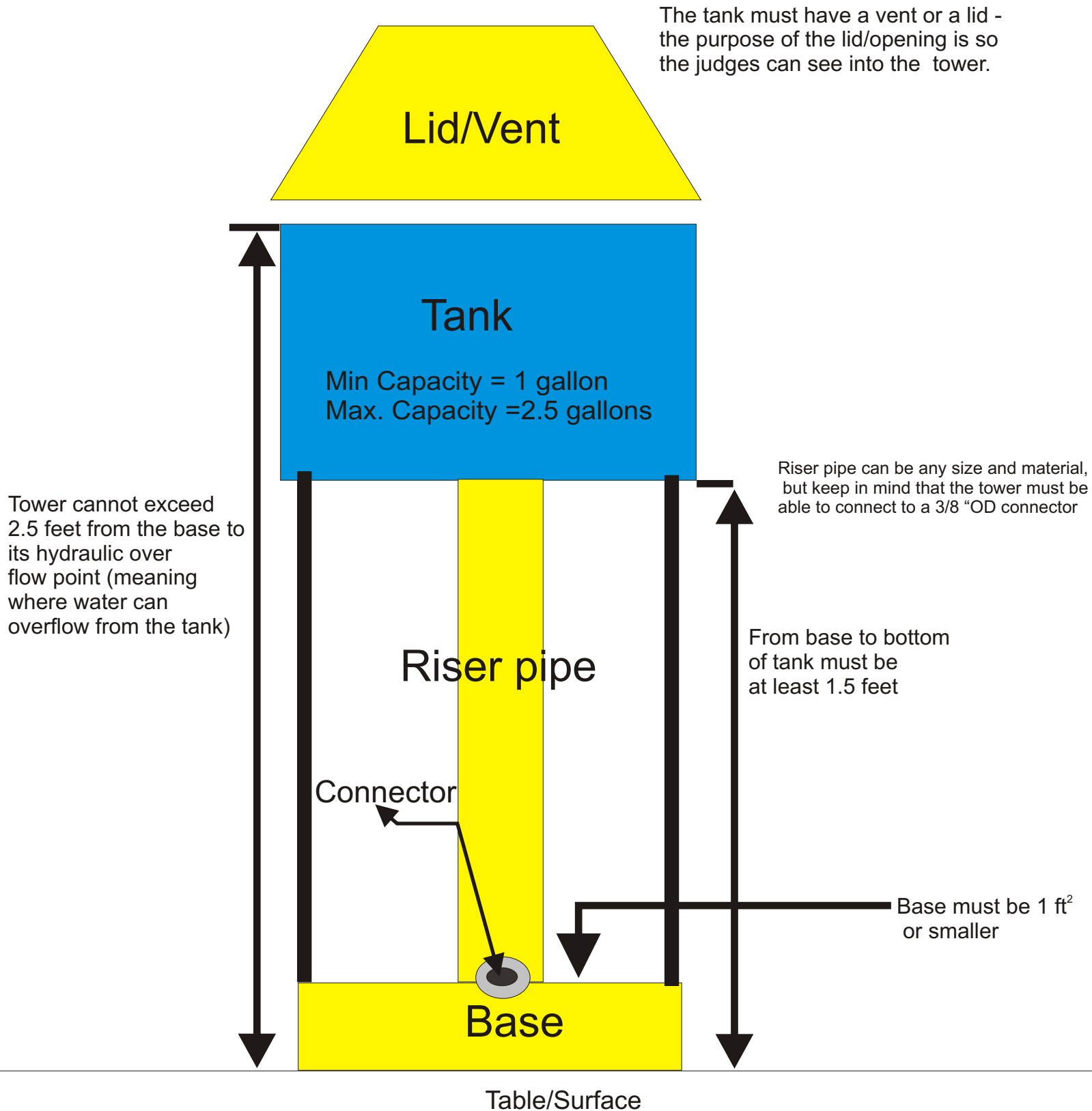
Take I-275 north to the Fowler Avenue exit (#51) and head east or take I-75 north to the Fowler Avenue exit (#265) and head west. See directions above.

From the west:

Take either the Courtney Campbell Causeway or the Howard Franklin Bridge east to I-275, and follow the above directions to the university. See directions above.

No parking pass is required to park in the Engineering parking lot. Please do not park in spaces labeled "reserved" or "staff".

MWTC Requirements



Additional notes:
Your Model must be an elevated tank design including a riser pipe, a tank, a supporting structure to hold the tank and a base.

The Maximum and minimum volume requirements INCLUDE the storage in your riser pipe.

The maximum 2.5 feet height refers to the length from the base to the hydraulic height (ie the overflow height).

3/8" OD connector will be supplied by the MWTC Chair (registration required) and is the only allowable 3/8" OD connector that can be used on competition day.